

NASA TECH BRIEF

Marshall Space Flight Center



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Communications System for Zero-G Simulation Tests in Water

A communications system for personnel conducting underwater neutral buoyancy experiments provides two-way communications between the test subject and personnel in control of life support, so that test personnel may be advised immediately of any malfunction in the pressure suit or equipment. The equipment was designed for use during tests concerned with fabrication, assembly, maintenance and repair of large structures and associated apparatus under conditions of weightlessness, as simulated by a water tank in which the test subject in a pressure suit is submerged.

The communications system connects seven observers, the diver, and a spare station, with all communications being broadcast over a public address system which includes underwater speakers. The system was designed with nine two-way communication stations and three one-way stations. The one-way stations include a public address speaker system designed to drive 20 W peak audio power, and an underwater speaker system capable of driving 100 W audio power. The underwater system consists of two 50 W amplifiers. Each amplifier may be

used to drive two 16 Ω , 25 W underwater speakers; however, it has been determined that, for the particular size water tank used for the tests, two 25 W speakers are adequate. The system was designed to switch either amplifier to either set of speakers, with the capability of putting 100 W of audio power into the water if needed, and also to operate from a 12 V battery stand-by power source.

Note:

Requests for further information may be directed to:

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No patent action is contemplated by NASA.

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Category 02